

# PATENT ABSTRACTS OF JAPAN

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(21)Application number : 05-118955 (71)Applicant : RICOH CO LTD  
 (22)Date of filing : 22.04.1993 (72)Inventor : TSUTSUI KYOJI  
 YAMAGUCHI TAKEHITO

(54) REVERSIBLE TWO COLOR THERMAL RECORDING MEDIUM AND DISPLAY MEDIUM, AND METHOD FOR FORMING OF TWO COLOR IMAGE USING SAME AND ITS ERASING METHOD

(57)Abstract:  
 PURPOSE: To form a high quality two color image by one time heating application by a method wherein two kinds of reversible thermal recording layers containing a reversible thermal coloring composition of a different colored state-keeping minimum cooling rate are laminated on a base material.  
 CONSTITUTION: Specific amounts of a developer and the first colorless or light-colored dye precursor are added into aqueous solution of an aqueous binder such as polyvinyl alcohol or the like, and mixed to prepare the first coating liquid for reversible thermal recording layer. Separately, specific amounts of the developer and a dye precursor which is different in coloring tone than the first dye precursor and has a different colored state-keeping minimum cooling rate required for obtaining a cooling material are added into aqueous solution of an aqueous binder such as polyvinyl alcohol or the like, and mixed to prepare the second coating liquid for reversible thermal recording layer. The first coating liquid for reversible thermal recording layer is applied onto a base material such as paper, a plastic film, etc., and dried to form the first reversible thermal recording layer. The second reversible thermal recording layer is laminated thereon to obtain a reversible two color thermal medium.

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(21)Application number : 05-141480 (71)Applicant : RICOH CO LTD  
(22)Date of filing : 20.05.1993 (72)Inventor : TSUTSUI KYOJI  
YAMAGUCHI TAKEHITO

(54) FORMING METHOD OF COLORED-STATE COMPOSITION, FORMING METHOD OF COLORED IMAGE AND ERASING METHOD OF COLORED IMAGE

(57)Abstract:  
PURPOSE: To provide a recording method wherein in a reversible thermal recording medium for which reaction between a coloring agent and developer is used, a plurality of colored images whose achromatization initiation temperatures are different from each other are made to form on a thermal recording medium for which one kind of thermal coloring compound is used, through which a function of the recording medium is made high.  
CONSTITUTION: After a composition of a recording layer is melted and made into a colored state by applying heat to a recording body into an imagelike state by making use of a reversible thermal recording medium possessing a reversible thermal coloring composition within the recording layer, a colored image is cooled at various cooling speed and a plurality of kinds of the colored images whose achromatization initiation temperatures are different from each other are obtained, a temperature rise of the recording medium to a temperature which can eliminate the colored image having the achromatization initiation temperature on a low temperature side out of recorded images is made to perform temporarily and the recorded image whose colored image is erased is formed.

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(71)Applicant : MITSUBISHI PAPER MILLS LTD

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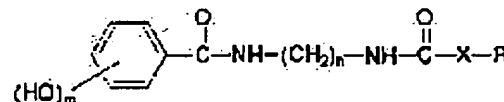
(72)Inventor : MARUYAMA ATSUSHI  
IIDA KAZUYUKI

## (54) REVERSIBLE THERMAL RECORDING MATERIAL

### (57)Abstract:

**PURPOSE:** To obtain a reversible thermal recording material capable of forming and erasing an image in good contrast by providing a reversible thermal recording layer containing an electron donating dye precursor and a specific electron acceptive compd. on a support.

**CONSTITUTION:** An electron acceptive compd. represented by formula (wherein m is 1 or 2, n is 0 or 1, X is a methylene group, an oxygen atom, an NH group or an NHHH group and R is an aliphatic hydrocarbon group) and generating a reversible hue change in a colorless or light-colored electron donating dye precursor under heating and the colorless or light-colored electron donating dye precursor are dissolved or dispersed in a solvent to prepare a coating soln. This coating soln. is applied to a support such as paper, a nonwoven fabric or a synthetic resin film and dried to form a reversible thermal recording layer to obtain a reversible thermal recording material. As a concrete example of the electron acceptive compd. represented by the aforementioned formula, there is N-(4-hydroxybenzoyl)-N'-n-octanoylhydrazine.



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